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STUDIES IN THE STRUCTURE OF SYSTEMS

1. THE SEPARATION OF PROBLEMS

MATHEMATICS, physics, astronomy were mere chapters in the philosophy of Greeee. Gradually they became conscious of their own problems and matured into relative independence. This process of emancipation is typical: many classes of problems (an infinite number perhaps!) are contained in the realm of what is commonly called philosophy; more or less vague efforts at solving them are made, and these absorb the attention for a while until there comes a day when one class is recognized as distinct from the others, and a new science is born out of philosophy. Mathematics arrived at this condition early; physics only in the days of Galileo. It is true the experimental method which he used would alone assure him immortality. But it is not this new method which emancipated physics; it is the particular type of problem which Galileo set. At first sight it might seem limited in application and insignificant in interest; but it proved fruitful in calling forth other problems of the same type, in whose solution the same or similar methods of procedure were effective. Singling out a new type of problem gave birth to a new science.

This process of emancipation of philosophy's progeny is going on vigorously even to-day. It seems only yesterday that chemistry was born; and now psychology is asserting with gentle emphasis that it is weaned from the mother milk of philosophy!

In the realm of the old Aristotelian logic there are four distinct classes of problems that are still treated promiscuously and without regard for their inherent distinctions. Solutions of one are given out for solutions of another, though in reality they may be perfectly irrelevant to it. To separate these disciplines by clearly distinguishing the kinds of problems which they present will greatly help in their development; it is the first and indispensable step toward their proper solution.

They all refer principally to what may be called "cognition," *i. e.*, knowledge of a certain kind characterized by the property of being coherent, necessary, systematic, etc. Mathematics, physics, may stand as examples of what is here designated by cognition and may always be substituted for it in the present discussion.

Suppose a system of cognition, such as plane geometry, to be given, *e. g.*, in the form of Euclid's "Elements." Various questions may be asked regarding it, such as: Are the propositions clear and convincing? Do you grasp them readily, or only with difficulty? Are the "axioms" more "evident" to you than the propositions? How is your attitude toward the truth of a proposition affected by the "proof" which is given of it? Is your study aided or impeded by "logical rigor" in the formulation of the "axioms" and the arrangement of the propositions? How were these propositions discovered, and what natural conditions are most favorable for discovering new ones? These questions can easily be multiplied indefinitely. They are all of a certain type which may be characterized as follows: They imply that, besides the system of geometry, an "I" or "you," in general, a "consciousness," a "subject" is given, and the questions concern the relation of this "consciousness" to the system of propositions of geometry. Both are, in the meaning of the questions, separate, distinct, though in relation to each other. What this relation is in particular is not stated. The propositions of geometry may be conceived as "acts" of this "subject," as "content" of this "consciousness," and thus as residing in this "ego"; but the words "acts," "content," "in" indicate again special relations of these propositions to the "subject," just as did "evidence," "clearness," "difficulty of apprehension." Any question even whether a proposition may "exist" independently of a "human consciousness" or whether it is, first and last, nothing but a "content of *some* human consciousness" must be considered to be of the same type.

In order to make this clearer let us call the propositions, concepts, etc., such as form plane geometry, *"logical entities,"* and let us say that they have "existence" in a definite realm which we will call the "realm of logical entities." Distinct from this "realm of logical entities" is the "ego" which enters into (or is in) relation to them; and I shall call this relation the *"subject-relation"* of the logical entities. Some such distinction is indeed required by any of the above questions and it does not in any way prejudice the decision as to *what* the subject-relation will be: the whole realm of logical entities may be "immanent" in the "ego," or "transcendent" —immanence and transcendence would merely express definite kinds of subject-relation.

It is apparent that what ordinarily passes for "idealism" is concerned primarily with problems regarding the subject-relation. And it has often passed for "obvious" that a consideration of the subject-relation is primary, indispensable, unavoidable, decisive. Quite on the contrary it seems to me necessary to recognize that problems regarding the subject-relation are merely *one* type of problems, that other, distinct types of problems are possible and important in the solution of which a decision regarding the subject-relation is *irrelevant*. This does not derogate in the least from the importance of carefully studying the subject-relation.

It seems to be recognized more and more that problems of this type belong to psychology; and I shall therefore speak of *"Psychology of Cognition"* to designate the discipline which studies the subject-relations of logical entities. It may be that this type of problems can fruitfully be subdivided; it may be that this whole type should be classified differently; it will have no bearing on the present study, so long as problems regarding the subject-relation of logical entities are recognized as distinct from others regarding the logical entities themselves.

It is a platitude that nothing is *true* for me unless it is true for *me*—though much discussion has hinged on this platitude. An extreme individualism has based on it the theory that no truth exists for me, unless it is recognized, seen, apprehended as such by me. All those who urge "evidence" as *the* test of logical truth, maintain in the last resort, or frankly even from the beginning, this theory. They base "logic" on "psychology"; for "evidence" is one kind of "subject-relation." So long as this subject-relation remains the problem under investigation, their claim may be made with much force. We seem indeed to be constantly guided in our search for truth by the "clair et évident" of Descartes—though it may well be suspected that the subject-relation corresponding to what we call "truth" is much more complicated, as the pragmatists are showing with convincing force. But when we set the problem of the truth of a proposition, *apart* from its power of convincing me or you, provided such a problem is admitted as possible, we enter a completely different realm of investigation. Still clearer is this when we state such problems as: Does proposition p_1 "imply" p_2, or not? What is the exact relation of p_1 to p_2? Can p_2 be "proved" by assuming p_1? We then do not ask: Can "we" prove p_2, but: Can it be proved? And these two do not by any means coincide. We must often admit the logical existence of relations, though "we" are unable to exhibit them. Every algebraical equation *has* a root, *i. e.*, a root "exists," but given an algebraical equation "we" can but rarely find it. It is by no means necessary to go to special cases in mathematics to show

the distinction between "logical" and "psychological" existence, though it is good to give a radical example where no "knower" exists who psychologically "perceives" the existence of the logical entity. For whilst in the ordinary examples we readily admit that a certain relation may logically exist between p_1 and p_2, though "you" or "I" do not "see" it, *i. e.*, though it does not exist for "us," we are apt to overlook the radical nature of the distinction, because we may still, and often rightly, say: but it exists "psychologically" for "somebody." This blurs the distinction; for instead of entering into the purely logical question of the relation of p_1 to p_2, we fall back into the psychological question of the subject-relation of this logical relation, by reiterating: but the relation R must be in subject-relation to "somebody," some "consciousness," some "subject," some "knower"! This is a mixing of problems, for the question was not: How do we, or how does anybody, perceive, or find, or in whichever manner establish a subject-relation to R; but: does it "exist"; does the proposition that "the sum of the angles in a plane triangle is equal to two right ones" presuppose the "parallel axiom"?

To some it will, no doubt, be quite impossible to "ignore," for the time being, the psychological problem of the subject-relation, and to them the "realm of logical entities" will always flit around some "consciousness"; as the platonic ideas always had physical existence somewhere, as Kant's "transcendental ego" was hidden in the innermost depths of the brain. And yet, it is just this "*ignoring*" of one problem when moving in the realm of another which is so characteristic of all fruitful work: in any "object" many kinds of problems intersect; properly and systematically to ignore the "others" is the first and necessary step toward the solution of the "one."

Whatever theory is accepted regarding the subject-relation of a logical entity does not in any way decide the question of its logical existence. If it is held that all logical entities without exception are in subject-relation to some "consciousness," it is still necessary to establish the distinction between "existing" and "non-existing" logical entities. This may be done by saying: a logical entity "exists" if it is "necessary," "of general validity"; whether such an attempt would prove successful or not is not our concern here; but it is our concern to insist that the mere relation of *all* logical entities to some consciousness is not capable of serving for a criterion to establish this distinction. *It is irrelevant to the problem of the existence of logical entities.*

If this distinction of the problems regarding the subject-relation of logical entities from those regarding the logical entities themselves is admitted, we may proceed to exemplify the latter types of

problems. I shall call them "*Logic of Cognition,*" "*Critique of Cognition,*" and "*Structure of Cognition.*"

"*Logic of cognition*" treats of the relations of logical entities, not to a subject, but to each other. What are the propositions of plane geometry? Does a certain proposition p_1 "imply" another p_2? What consequences follow from certain assumptions? What laws are valid in the drawing of inferences? Logic of cognition constructs, from the true beginning, systems of cognition. Attempts such as Whitehead and Russell's "Principia Mathematica" are essentially examples of what is meant here by "logic of cognition." It is dogmatic in form; it does not justify or criticize; it exhibits, it hypothesizes, it proves; in brief, it constructs.

But with its special type of problems "logic of cognition," particularly in its beginning, combines (and often confuses) problems of the third type: "*critique of cognition.*" "Critique" determines the logical "value" of systems of cognition; its main problem is the determination of the "truth" of a system, whilst "logic of cognition" should be indifferent to the question whether the hypotheses, whose consequences it develops, are true or not. When mathematicians exhibit sets of postulates of algebra, of geometry, they move in the realm of "logic of cognition"; when they add proofs of the "independence" or "consistency" of these postulates, they enter into the realm of "critique of cognition." Critique elaborates and applies certain criteria (which may be called "criteria of truth") to systems of cognition.

Construction and critical examination of systems of cognition, embracing as they are, leave still another type of problems dealing with the logical entities themselves. To state this new type of problems, I find it convenient to take up the old distinction between "form" and "content" and apply it to systems of cognition. Suppose we are studying the properties of parallelograms. We could write down a system of propositions, such as: the opposite sides are parallel; the opposite sides are equal; the opposite angles are equal; etc. But we might next ask: Are these propositions "independent" of each other? Or can we, in a plane geometry, by assuming some of them, deduce the others? We might then elaborate a different set of propositions, in which we proceed from some "defining" the parallelogram to others which we "prove." In both cases the same logical "content" is presented, namely, the properties of a parallelogram, but in different "form": a mere enumeration was "transformed" into a deductive system. And therewith a whole class of problems is presented all of which refer to the *structure of these possible forms,* in which the logical content of systems of cognition is or may be presented. What are the structural elements of a

"deductive system"? How is it to be distinguished from "inductive systems"? What are the advantages of either form? What conditions must a certain logical content satisfy so that it can be put into the deductive system form? Are other, better forms existent or possible? What is the nature and function of "axioms," "definitions," "proofs"? The problem of the "new" in mathematics, the advantages and disadvantages of applying the deductive system form to "philosophy," all these are examples of the type of problems which constitute *"structure of cognition."*

These preliminary remarks may serve to direct attention away from some problems and toward the type to be examined in these studies, namely, the ones pertaining to "structure of cognition." Toward the necessity of keeping these problems distinct the following studies will add new evidence. Yet, the relation of these four disciplines to each other is so peculiarly close, that it is small wonder they have not been clearly distinguished before. No system can be presented without an appeal to the understanding of the reader, *i. e.,* without some subject-relation; every system will use concepts and propositions of logic of cognition; every system will have some structure, and endeavor to conform to the criteria of truth. This tends to confuse the issues; but if the emphasis is laid on the *problem* which is presented for solution, the distinction becomes simple. Every system *has* a definite structure, but this structure need not be the *problem* of every investigation; every system shall enter into a definite subject-relation, but this subject-relation need not be the problem of every investigation, etc.

Since the days of Kant, and largely in consequence of his work, our thinking has been controlled by the idea of "presupposition." Categories and fundamental judgments were to him "conditions of the possibility of experience," *i. e.,* that which is necessarily presupposed by experience itself. This idea has been extended to apply to sciences as a whole when we say: mathematics is presupposed by physics and attempts have been made to order the various disciplines in a series from this point of view of "presupposition." It is necessary to insist here, however, that this idea of "presupposition" leads readily to vagueness and confusion if applied promiscuously. It requires two restrictions.

In the first place it is by no means "self evident" that the various disciplines can really be arranged in serial order by this principle of presupposition; and this applies to the four disciplines which we have differentiated above. In a certain sense any one of them "presupposes" all the others. You can not study the subject-relation without using logical concepts and methods, without applying a definite ideal of truth, without putting the logical content of your

study into a form of definite structure; and the same applies around the circle. Not only is it vain thus to try to find the "more fundamental" of the four, but it is positively misleading and injurious: we are apt to think that the questions of one can not be answered unless those of all the others are answered, somehow or other, first. We become so involved in "presuppositions" that we are unable to move a step forward or backward. The lesson of this predicament is instructive for all other cases. We must break through the idea of "presupposition" as applied to the various disciplines and recognize that each discipline makes its own presuppositions, its own hypotheses on which it builds; and in doing so may ignore the hypotheses of others. Mathematicians let "solids" interpenetrate each other, assume lines without breadth, weight, or color; to the physicist or psychologist such entities may be quite chimerical.

In the second place the idea of "presupposition" is meaningless, unless the "point of view" is added from which the presupposition is considered, in other words unless we state in the realm of which problem the particular presupposition is studied. The discipline which is "presupposed" by another in the realm of one problem may in turn presuppose it in the realm of a different problem. And thus we are led back again to the first distinction between the various *problems* which control our procedure: not methods, not objects, not principles and presuppositions separate these disciplines "psychology of cognition," "logic of cognition," "critique of cognition," "structure of cognition," but their problems!

If this is kept in mind, a paradox which may otherwise be puzzling will readily dissolve. In this study of the structure of systems we shall frequently "criticize" other accounts, and in this critique apply criteria which can be developed satisfactorily only in "critique of cognition." Thus we shall frequently apply the criterion of "completeness": certain accounts will be found defective in completeness in that they do not account for certain "facts." This would indeed be an infringement on the proper province of "critique of cognition," were it not for the circumstance that such critique is here merely incidental and for purposes of exposition. When some day the structure of systems will be studied more elaborately, we shall be able to dogmatically develop the various possible accounts, and then submit them to a systematic "critique." The growth of any science illustrates this, though what has been done more or less instinctively we can to-day see rationally. The change in procedure between Russell's "Principles of Mathematics" and Whitehead-Russell's "Principia Mathematica" is instructive in this respect, and illustrates the maxim that the reduction in polemic is proportional to the degree of logical perfection of a discipline; for

the logical development of a system is one thing, its critical evaluation a second and distinct problem.

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A SIMPLE METHOD FOR THE STUDY OF ENTOPTIC PHENOMENA

THE introspective examination of the eye is interesting, both in experiments and in classroom work. The general name of entoptics for this subject was suggested by J. K. Listing. The method of studying the interior of one's own eyes, by letting light shine through a small pin-hole held close to the eye, has been carefully developed. Barrett constructed an elaborate instrument on this plan and made some detailed experiments which are reported in the *Proceedings of the Dublin Royal Society,* 1906. That the inside of the eye can be illuminated by the light reflected from a bright surface held close to the eyeball has been frequently mentioned, but the possible improvements in method that this fact provides have not been developed so far as I am aware, nor have their great advantages been appreciated.

A very simple and very effective apparatus for becoming acquainted with some of the characteristics and phenomena of one's own eye is provided by small silver beads strung on a wire in a spectacle frame. From the standpoint of psychology, perhaps the most important use of such an instrument is in the study of the movements of the iris.[1] If, for instance, three beads are strung for each eye on a wire adjusted to the spectacle frame so that they are horizontal just below or perpendicular to one side of the pupil, they will throw three circles of light upon different parts of the retina of each eye. For some experiments it is well to cover the frame with black cloth, allowing the beads to show through a slit. The beads may be moved back and forth and the intensity of the light increased or diminished by approaching it or removing from it until the middle circle is exactly tangent to the two others.

In the first place we have here a means of observing the reflex action of the pupils in both the eyes at the same time. Their coordination may be examined.

In the second place we have a means of measuring quite exactly

[1] Badol reports an instrument to study dilations of the pupil in *Transactions de la Société de Biologie,* 1876. He used a cylinder and two cards with pin-holes. For the study of iris movements from the medical standpoint, see Bumke, "Pupillenstörungen," 1904, and Bache, "Pupillenlehre," 1908.

the enlargement and contraction of the pupil. The middle circle will go over into the field of the other circles or will draw away from them. A scale at a fixed distance from the eye may be used to interpret dimensions objectively.

In the third place and this is an exceedingly important point—the observer may take an easy position, settling back in his chair and permitting everything to fall into a normal condition. Such a condition is hardly possible where the eye is being looked at from the outside.

The reflex movements due to quantity of illumination, to converging movements of the eyeballs, to bodily irritations, and to mental states can be examined at one's leisure. A physician who undertakes to study iris movements in a patient would do well to be familiar with the reflex action in his own eye. Interesting are the changing jerkiness of the continual oscillations, the influence of fatigue, the reaction time, etc. It is noticeable, for instance, that the motion of the circles of light away from the center is greater than that about the macula. Again, the student will probably be surprised to find that, given a certain coordinated dilation with one eye closed, the opening of the closed eye brings about a quick contraction. He might have expected that, as the intensity of the sensation is not increased when objects are seen with two eyes, so the reflex motor effect would not be increased.

The use of a single bead with two or three sources of light moved nearer and farther away enables one to light up surfaces of the retina with different intensities. This different lighting is an advantage when one wishes to compare entoptic shadows falling on the outer portions of the retina with shadows at the center. If the lighting be of the same degree, the central shadows are so much clearer that it is hard to pay attention to those away from the center. The difficulty may be partly overcome by strengthening the illumination which is thrown upon the outer parts of the retina. This advantage becomes quite important when one is trying to locate the position of the bodies which throw the shadows. Those near the center of the lens do not change their respective location on the different circles of light. Those in front move apart and those behind move together.

In my own eye there is a fixed opaque body at about the center of the lens. A body like this enables one to confirm the blind spot. There is also a movable anchored body on the nasal side just back of the lens. I can throw this into the field of vision by a quick movement of the eyeball, and then it will slowly draw back out of sight. If the light be dimmed the iris curtains are drawn away and show it stationary.

These circles of light give indirect information about the place

of the veins and arteries that appear upon the retina when a light is moved about just below the pupil. The student will probably be surprised to learn first of all that none of the blood-vessels are made visible when the circles of light are thrown upon the retina from his bead. Our method of studying entoptic phenomena allows a simultaneous combination with Purkinje's experiment. The arbor-like branches will then be seen passing right across the circles of light.

I will mention one more fact observed on using one bead with two lights, which seems to have a rather special psychological interest. If a light of a certain intensity is throwing a circle upon one portion of the retina and another stronger light is turned on to throw a circle upon another portion quite a distance away, there is an immediate dimming of the first circle. The dimming is of such a character as to appear to be entirely a peripheral matter and not due to mental interpretation from contrast. A possible analogy might be the disturbance of one current of electricity by the proximation of a much stronger current.

The same bead arrangement may be used to throw different colors from colored electric light globes upon different surfaces of the retina. These circles may be superposed, the different parts of the retina compared as to color sensation, the effects of contrasts brought out, etc.

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DISCUSSION

ON MIND AS AN OBSERVABLE OBJECT[1]

A PAPER of this same title which I offered a year ago met with a success beyond my expectation. It is something to have aimed at brevity and to be assured one has not missed completeness. Now there are a number of ways in which a theory of mind may be vitally amiss: in its epistemological background, in its psychological application, in its ethical consequences. Yet brief as was my exposition, my critics gave me to understand that I had let none of these ways of going astray escape me.

If then I return to my thesis, if I am led into an insistence neither justified by its merit nor excused by its interest, something

[1] This paper was prepared to be read before the Philosophical Association at Cambridge; but owing to a misunderstanding on the author's part was presented too late to be included in the program. With this explanation, the paper is offered without change of form.

must be forgiven a scruple: I would make sure that my sinning was as round and perfect as my critics would have me think.

As for background, it can not be painted in with a word or two. Professor Miller in the JOURNAL OF PHILOSOPHY has called attention to the defects of an epistemology that would let one speak of mind as a trait of behavior, and I have met as best I could objections so well considered and so clearly put.

This matter of background may then be allowed to rest for the moment, but it is with no little regret that I postpone the consideration of ethical consequences. For I was greatly interested in a deduction of Professor Ormond's making: One who regards mind as a trait of behavior, must he not hold that when the body is dissolved in death the soul that once inspired its outworn flesh is also dissipated and lost?

I have spoken too hastily of criticism. Mr. Ormond would justly blame me for classing under this head remarks that were meant for no more than question. Mr. Ormond would be no more inclined than I to assume that a philosopher is bound to save his soul. On the other hand, I am at least as unwilling as Mr. Ormond could be to divest myself of any rag of immortality that may still cling to me in this cool age. But there are immortal souls and immortal souls. The learned in their high power of abstraction have pretended to find solace in the thought of a soul that, surviving the body, continues to enjoy all the individuality embodiment once conferred on it; living on, I know not where; experiencing, I know not what—I can't think how. This very algebraic soul, this diagram of an ethical idea, my thought may inadvertently have rubbed out. If so, let that rest which never has rested.

But simple folk too have their notion of immortality, and with the simple I would seem to have much in common. I should be sorry to feel that nowhere in my philosophy might I come across the like of that brave and kind soul which has gone marching on now these many years in the songs that men sing. Would you say that my thought had fallen into undignified ways if it sought this spirit in the very world that still sings its name, in the world which still holds a grave where its body lies a-mouldering?

Of all these delicate, difficult matters I would willingly speak another time. Just now there faces me an issue more vital than the destiny of souls after death—it has to do with the nature of souls during life.

To Miss Washburn, whose interest lies in comparing souls, I am indebted for a criticism that cared little enough what theory of knowledge may have gone before my thesis, what ethics might follow on it. Miss Washburn's criticism aimed at things practical: What

are you going to do with a being who thinks, but who exhibits no behavior for the very reason that he thinks? What are you going to do with the passive, the utterly passive thinker?

Before the Panthéon at Paris sits Rodin's image of the Thinker. I know that a statue doesn't really think, but I know too that those who think may sit as stonily statuesque as Rodin's Thinker. Of one who has dared to suggest that mind is a trait of behavior it must inevitably be asked, What in the behavior of the thinker who doesn't behave is his thought?

In the face of criticism so sympathetic and yet so thoroughgoing, it would be vain to point out the differences that make flesh not marble and marble not flesh. Of course the creature of blood and muscle is not wholly inert: his heart beats, he breathes, his eyes blink. More than that—the dendronated termini of the axis cylinder processes of his cortical nerve cells may now and then put forth a new shoot; at the very least, some molecules of him may effect an interchange of atoms while he thinks. The trouble is that Miss Washburn refuses to identify any sort of a motion of atoms with a thought, and this makes the whole situation trying. If I say that the movement of certain atoms is what I mean by the behavior which is thought, the hands of Vogt and Büchner will reach out from Orcus and have me. If I refuse to say this, my own hands will seem to cast me off.

One who has to surmount an obstacle of magnitude is entitled is he not to a running start, a start from old and settled things if any such can be found that hold an analogy? Now this image of the passive thinker does suggest to me something so old as to be almost forgotten—it is the figure of dormant life.

In the *British Foreign Medical Review* for January, 1839, appears the review of a recent medical work. The author, Mr. Carpenter, had defined life as action and had shown—so the sympathetic reviewer sums him up—"that instead of looking for its cause in an imaginary vital principle . . . presumed to exist for the sake of explaining the phenomena, we ought to study the properties which organized structure enjoys and the agents which produce their manifestation."

Even to this reviewer of 1839 the idea that life is behavior has nothing new about it, for he continues, "Some observations are made (by Mr. Carpenter) in refutation of the doctrine of a vital principle and we do not think them supererogatory; for although the hypothesis would hardly have been expected to survive the fine scientific thrusts of Dr. Pritchard's classic weapon or the strokes of Dr. Fletcher's more truculent blade, it seems even yet not quite extinct."[2]

[2] M. Paine, *Med. and Phys. Com.*, I., 13.

The theory that life was something other than behavior was not quite extinct in 1839! Will any theory that substitutes a *Ding an sich* for observable phenomena ever win to extinction? After dormant life comes passive thought.

But to return to 1839 and the years that follow. Among our early American physiologists is to be numbered Martyn Paine, whose work is characterized by the late Dr. Gross as "of great scope and much erudition." Of much erudition, surely, and I beg to recommend Paine's "Medical and Physiological Commentaries" to any in search of sources for a history of vitalism. Of what scope too I know to my sorrow. And yet of the pages and pages of erudition and scope would you know the one image that sticks firmly in my mind, Martyn Paine's arm and shield against classic weapon and truculent blade? It is just a seed, just an ordinary grain of corn, say. For one may defy the world to prove that this little dried-up thing is doing aught to support the hypothesis that it is alive. Yet one may take testimony of all the world that it is a living thing. Dormant life! What does it mean? It takes more than classic weapon and truculent blade to establish life as the thing Bichat defined it to be "the *ensemble* of functions that resist death." There is the seed corn that refuses to function, refuses to resist—for what is there to resist—and yet it lives! But what in it is its life? Ah, it is a certain principle called vital, dormant now, but only awaiting the right conditions to wake into the free gesture of life, into the blade, the ear, the full corn in the ear.

So Martyn Paine. But is it hard for us, who are not of 1839 or 1840, to see that the desiccated seed-corn is living not for what it does, if it does aught in a faint-hearted way to resist death, but just for what it might do? It is still on account of its doing that we call it alive; but on account of its prospective, not of its actual doing. It is *now* alive, for we may now calculate from its condition what under other conditions it would do.

If there is any analogy between dormant life and passive thinking I take some comfort in the formula in which my thesis was presented. Consciousness is behavior, if you will, but "more accurately, our belief in consciousness is an expectation of probable behavior based on an observation of actual behavior, a belief to be confirmed or refuted by more observation as any other belief in a fact is to be tried out."

If Martyn Paine had so viewed dormant life, he would not have felt the need of appealing to a vital principle. He would not have added this unobservable thing to facts observable in order to explain the meaning of the terms we use in describing these facts. If we can bring ourselves to view the passive thinker as we view passive

life, we shall not have to add an "eject" or "thing-in-itself" to the behavior we see in him in order to explain what more than this meager behavior is the rich thought we attribute to him. We shall perhaps find that what we add to behavior actually observed is an actual calculus of probabilities; but the nature of this calculus demands the nicest analysis both as to the grounds on which it rests and as to the kind of test to which it can ultimately be put.

To come at the matter from another angle: the analogy argument for other minds would not be so pernicious if it were not so true. It offers an accurate account of what I do when I furnish a passive thinker's mind for him, only it fails to suggest any grounds on which I may justify my doing; it avoids pointing out a way by which I may discover a mistake if I have made one or enjoy the sense of truth if I have hit on it.

Yonder, say, is my thinker. It is of course the observation of past and present behavior that invites me to consider him as a thinker at all and may even suggest to me that his thought is dwelling on a mathematical problem. But sooner or later in defining his thought I venture a leap in the dark—fill his mind with the kind of thing that goes on in mine. I am not justified by observation, but since I know that a mathematician can not think about mathematics in the abstract I give him a definite problem. He is trying to integrate a differential equation; now he has seized upon a transformation that looks promising; for a moment he hopes, in another moment he has cast the suggestion aside—it has not worked. One may elaborate to one's taste, one is still abstract while the fact before one must be concrete. Our mathematician is integrating? Very well, what is he integrating? Is it an equation of the third order and fourth degree, or of the fourth order and third degree, or of some other order and some other degree?

The obvious resource of one who wants to know is to ask the thinker what he is thinking about. Whereupon the obvious remark of one who regards consciousness as expected behavior is that one who so asks is appealing to behavior to confirm or refute his expectation. But such a triumph is brief. The man who replies is already other than the man who thought. He is in a more advantageous position than I to venture a guess in the same sense that he is better placed than I to see the wall behind my head; but for him as for me it is only a guess. Memory is generally less fallible than divination, but it is fallible enough. Meanwhile if the question as to this thinker's past has a meaning it has also an answer and there is a definable method of arriving at this answer or at least of indefinitely approximating it. An appeal to the thinker to tell us what was his thought can not give us the truth nor open a way by which we may approach

the truth. The thought just past is lost in the infinite ocean of the past, the pebble just now dropped into this ocean is no easier of recovery than is the treasure sunk there a thousand years ago.

Let us then merge our present problem in a more general one; let us try to solve the difficult in terms of the more difficult; let us substitute for our passive thinker another hero.

From certain letters of his, I judge that George Washington spent Christmas Day, 1790, at Mount Vernon. That there was a George Washington and that he was in a certain neighborhood at a certain past time an examination of now existing things will enable me to establish. But what of his slave-boy Cæsar? Was there such a slave-boy? At noon of this day was he in the kitchen of Mount Vernon helping the cook? And what was going through his mind at the moment? Was or wasn't it a thought of approaching dinner?

These questions, humble in themselves, acquire an immense dignity when we realize that it tasks all our philosophy to answer them. Yet there must be a way of answering such questions, or else there is in the domain of reality such a thing as an unknowable fact. This is an equally portentous figure to introduce into one's philosophy, whether it stand for the being and thought of a slave, or whether it be taken for the hidden name of God. In either meaning, in all meanings, it is a term that I have long decided to leave out of my philosophy. The right to do so is one of those questions of background with which I am not on this occasion dealing.

For me, then, and for all who so far agree with me, there must be a way of reconstructing the past. Now the only way of reconstructing the past which science has so far developed is suggested by the classic saying of La Place: "Give me the mass, position, and velocity of every particle of matter in the universe, and I will predict its future and recount its past." I say this utterance of La Place suggests a method of reconstruction: it does not define one; he existed at a moment of the history of mechanics that took too seriously the conception of law at which it happened to have arrived. Of the refinements and generalizations that would have to be introduced in order to convert this suggestion into a definition, I have treated elsewhere, and as they do not affect the issue with which we are now dealing I shall pretend to take La Place quite seriously.

If we do take such ideas seriously, we realize that the conditions on which the whole past may be reconstructed can never be realized. The data La Place asks for are infinite, the law by which he pretends to handle these data is a law that is known to hold only within limits of probable error which can never be reduced to zero. But what is interesting in the situation is that we can see no obstacle to the gathering of more and more of the data demanded, nor to the endless re-

duction of the probable error which attaches to any law in which we propose to substitute the data gathered.

We have here then a method of approximating indefinitely a certain order of facts; but alas! it seems to be an order very different from that in which lay the facts about which we enquired. We asked, Did such a being live? Did he have such and such a thought? And we are answered, At least you may find out within any degree of accuracy required what atoms were in the neighborhood at the time you mention and how they were moving.

I was asked at the outset, Is the movement of an atom a thought? I was afraid to answer yes, and I was afraid to answer no. But such courage has come to me with study that I am now prepared to answer, yes and no. In order that this answer may not seem in any way ambiguous or evasive, I must explain that the movement of an atom is the movement of an atom and a thousand things beside.

> When my love swears that she is made of truth
> I do believe her though I know she lies.

As these lines passed for the first time through the poet's mind, I am ready to believe any La Place who tells me that an atom of carbon in the poet's brain described such and such a path. But if the same reconstructor assured me that another atom of carbon, more like the first than one pea is like another, described just such another path as a certain lump of coal was being shot into my bin, I know not how I should disbelieve him. What then? If moving atoms are thoughts, had not that lump of coal a bit of the poet in its make up?

Love, as our poet sings it, is not the only god that teaches the ear to be willing and the heart to accept truths it knows to be untrue. Mathematical science with its beautiful simplicity has a way of casting spells as deep. The lust for mechanical images is as seductive to the intellect as are other desires to the flesh. One may laugh, but one may not by laughing cure. William James pointed out that the most ravishing music was *after all* but the rasping of hairs from a horse's tail on the intestines of a cat. Plato, with gentler irony, had the Socrates of his Phædo explain his situation in like terms. Why was he sitting there awaiting the cup, instead of flying to Megara or Bœotia? *After all* it was because his bones were at a certain angle with each other and his muscles drawn in such a way as to keep them so.

Such sayings as these would be without humor if they were not true. There is nothing false in any of them—or at least there is nothing more false than the recurrent "after all" which seems merely to introduce them. However, nothing can belie a truth as can the gesture with which it is presented. Granted that the poet, the

musician, the moral being, is a congeries of moving atoms, is he *after all* nothing more? Gossmann in his *Empirische Teleologie* has a way of answering the question which has always seemed to me full of meaning. Because, he says, mechanism is *allgültig* it is not therefore *alleingültig*. Mechanical insights give the truth, they only deceive us when we take this to be the whole truth.

Now the vice of those who in the past have criticized the view that would treat mind as an aspect of mechanical behavior is that the critics themselves have been the slaves of mechanical and mathematical ideas. They have seen that there is a sense in which the movement of atoms taking place in a body can not be the thought of that body viewed as a thinker. They have proceeded with the instinct of a mathematician to add something, just as a cook whose dish is tasteless adds seasoning. But as they couldn't get the right flavor by adding more atomic movements, they added an "eject," a "parallel series," an "epiphenomenon."

My whole suggestion is that instead of helping out the shortcomings of a mechanical description of experience by the mechanical addition of something not falling within experience, we simply change our point of view toward the mechanism with which we are presented when that mechanism *also* behaves in a teleological way. Then we shall not be tempted, in trying to say what the movement of a certain atom of carbon has to do with Shakespeare's thought, to study its analogy with all similar movements of atoms of carbon in the wide world. If we insist on doing this we can not fail to arrive at the conclusion that such movements as a class have nothing to do with thoughts as a class. But then, if in order to learn what the turning of a certain wheel in my watch had to do with keeping time, I compared it with all the wheels in the world, those of locomotives, those of rapid-fire artillery, and the rest, I should have to conclude that wheels as a class have nothing to do with chronometry.

I come back at last to my passive thinker. What I observe of his present behavior is not his thought; what I expect in the way of future behavior is not the full meaning of his thought even though that behavior be a minute exposition on his part of what he *believes* to have been his thought; what I might observe of the minutest mechanical changes in him is or is not his thought as I view it. Detail by detail these atomic movements may be classed with other atomic movements and the class has no common function. Putting all together—all that are contained within his skin—I should think it unlikely that if they occurred within another skin placed in other surroundings they would work the same ends, be essential to the same activity of mind. But in so far as they are the mechanism by which the same peculiar aspect of teleological behavior may everywhere be

worked out—then I am willing to say, This is the behavior of the passive thinker that I mean by his thought. I should begin by looking for such movements of atoms as actually moved too slightly for us to notice it—the organs of expression, the tongue, principally, and the eyes. Or perhaps I should find part of the movements to be of this nature, part of them such as strained the muscles that inhibited such expression. Either would be the first step toward a teleological interpretation of a mechanical event. But of these details I am not sure. To find just what that behavior is which others call the criterion of mind and which I call mind is a problem of long and careful analysis. For this analysis we must turn to the psychologist, and, above all, I have recently come to hope, to the comparative psychologist. Yet even this hope must learn to be patient. When one passes beyond new observations to look for new interpretations one finds the shadow of the eject clouding fresh fields.

"Bien entendu," writes Georges Bohn in a chapter discussing the "criteria of psychism"[3]—"bien entendu, je ne parlerai pas ici de la conscience des animaux. Je ne la nie pas, mais je ne peux rien savoir à son égard. Je parlerai de psychisme, ce mot designant la complexité de phénomènes que je parviens à analyser plus ou moins."

I can not think a metaphysics useless that might prevent a writer of the keen intelligence of M. Bohn from perverting his own sense of what words should mean to the use of those whom he occasionally refers to as "metaphysicians." In science as elsewhere it is not a bad thing to have one's courage with one, and a very little, I should think, would suffice to "deny" what one "will not speak of"—what one can not speak of for the simple reason that one can know nothing about it. Isn't it saner to seek the meaning of consciousness itself among "the phenomena one can more or less analyze"?

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REVIEWS AND ABSTRACTS OF LITERATURE

Elements of Physiological Psychology. GEORGE TRUMBULL LADD and ROBERT SESSIONS WOODWORTH. New York: Charles Scribner's Sons. 1911. Pp. xix + 704.

The "Elements" has served a generation of psychological students as a storehouse of information, covering not only the phenomena of nervous structure and function in their relation to the processes of consciousness, but practically the whole domain upon which experimental psychology had entered at the time of its publication, embracing all the orders of

[3] "Naissance de l'Intelligence," p. 111.

sensation, perception of objects, the time-relations of mental phenomena, emotional states, the system of expressive reactions, and reproductive processes. If the great extension of research, not only into new fields, but also within each individual group of problems, be kept in mind, it is high praise to say that the new edition has fully maintained the standard of comprehensiveness and exactness by which the work was originally marked.

What this extension means in mere bulk and in the tax it imposes on the authors, in making the work representative of the status of research throughout the field discussed, may be inferred from a comparison of the number of sources cited in the two editions, respectively. In the old, there were some hundred and fifty, all told; in the new, considerably over five hundred, or well on for four times as many, appear. The increase in number of individual citations in the new edition is even greater than is indicated by a comparison of authors, for while in the original edition only one fourth of the names occurred more than once, repeated citations in the present mark nearly one half the names.

Yet the bulk and weight of the volume have not been increased. The numbered pages of text in the new edition are less by one than in the old; and while the total number in the revised edition is greater by some half dozen pages, the use of a thinner, but tougher and more flexible, paper has slightly decreased the thickness of the volume. At the same time, nothing has been sacrificed in the way of topographical excellence. The paper is solidly opaque and white, the type large and clear. The pages, also, are of the same size as in the original and the number of lines to a page remains unchanged.

The subject-index of the new edition shows an enlargement even greater than that which marks the list of authors, increasing from about one hundred and forty titles to almost eight hundred, or nearly six times. When it is recalled that not only has the general product of experimental research during the last quarter of a century been added to the matter contained in the original edition, but that wholly new chapters have been introduced, such as the discussion of the process of learning and of the place of the nervous system in the animal kingdom, the successful confinement of bulk within the limits of an easily handled volume is the more remarkable. This has been accomplished in two ways. The more obvious of these is the omission of certain chapters of a more theoretical or speculative character which leaves the empirical summation unaffected. The more important modification in this regard, however, is the painstaking economy of statement which is maintained throughout the work. How much has been done in this way, even in those parts which have undergone the least material changes or additions, can be appreciated only by a careful comparative reading of the two editions, chapter by chapter. The whole work is a close-packed compendium of research which represents nothing less than the history of physiological psychology during the past twenty-five years, the first generation of its continuous and general activity.

What that period of time has meant in the history of experimental

psychology in America, in its bearing both upon the general extension of interest in the study and in the development of the technical means of research, is indicated by a comparison of the place which American titles hold in the two editions. In the original work a half dozen such names occur, or one in twenty-five; in the present edition there are, roughly, six times that number, or nearly one fourth the total. Even allowing for greater completeness in the review of American literature, this change of relative position is impressive. Nor is the advance restricted to any individual province; it appears in the comparative study of organic types, in physiological research, and in the field of exceptional and pathological phenomena as well as in the study of normal processes in the human subject.

The general arrangement of the original edition is retained without change. The summary of psychological data is supplemented by a description of the physical basis of mental activities and by a discussion of the theoretical relations which exist between the two systems of phenomena. The work thus comprises three general divisions: first, a detailed account of the structure and functions of the nervous system; secondly, the presentation of the qualitative, quantitative, and temporal correlations of nervous and mental activities; and lastly, a consideration of the nature of mind in the light of the preceding discussion.

The first part presents two departures from the first edition, apart from the many internal modifications and additions by which it is marked. The one departure consists in a transference of the two chapters on cerebral functions from their original place in the second part to the close of part one. The change brings these chapters at last into a proper relation with the discussion of the mechanics and activities of the nervous system, to which the first part of the work is devoted. The second departure appears in the introduction of a prefatory chapter on the significance of the nervous system in the animal kingdom, in which the different organic types are characterized as well as the general functions of nervous elements, tissues, and systems pointed out. The chemistry of the nervous system is properly given a separate place (new ed., Chap. V.). It is not, however, the addition of a new discussion to the text, since the same problem is treated in the first chapter of the old edition ("The Elements of the Nervous System"). The subdivision was desirable, not only in view of the more substantial knowledge now possessed, but also on the ground of improvement in the logical scheme of treatment.

It seems to the reviewer scarcely correct to say in the preface to the new edition (p. vi) that "two entire chapters . . . have been added to part one," the second being chapter two (new ed.) on the "Development of the Nervous System in the Individual." The sixth chapter of the original edition entitled, "The Development of the Nervous Mechanism," is devoted to this question, and its account runs parallel to that of the new. What does mark the revision is the greatly increased precision with which the intimate process of development is traced. The author of the original edition, limited by the results of investigation at the time, was able to follow, by contrast, only the gross features of the process. In con-

cluding the chapter he adds the words: "All the coarser differentiations of structure to which reference has thus far been made are only the expression—so to speak—of certain histogenetic changes which have been secretly taking place." These changes are now largely an open secret, and it is in the detailed description of the histological development of the nervous system that the new edition differs from the old, rather than in the introduction of an organic part of the discussion previously omitted.

The advance in histology is also reflected in the admirable and abundant illustration which accompanies this section of the new edition. It is shown, for example, in the description of the elements of the nervous system,[1] especially in the new series of cuts (Figs. 46–59). In the original edition there was not a single illustration of the minute geography of the nervous system and its elements which this series of figures represents in such variety and detail. The evidence of progress in this direction is not confined to a single chapter, but extends throughout the anatomical part of the work; compare, for example, as regards both text and illustration, the discussion of the microscopical structure of the cortical layers of the hemispheres. The full treatment of the nervous system from all standpoints—structural, functional, chemical, developmental, etc. —as an introduction to the psychological discussion of problems of psychophysiological interrelation gives the work an independent value for the medical physiologist and alienist which no description of the purely mental phenomena could possess. At the same time the "Elements" provides only the general basis for the work of physician and psychiatrist since its scope is restricted to the phenomena of normal psychophysiology, a limitation which is strictly adhered to even when it involves the exclusion of data repeatedly dealt with in psychological laboratories, such as the influence of drugs upon reaction times, expressive movement, and the perception of objects and space relations.

The second part of the work retains the arrangement of the original edition throughout. Its general subject is psychophysical correlation which is treated qualitatively in relation to three groups of mental phenomena—sensations, perceptions, and representations; quantitatively, in the discussion of the psychophysic law, so-called; and temporally, in the review of reaction time and its complications. Apart from the revision and supplementation which mark practically every page, this section of the work is notable chiefly for the new matter added in the later chapters, in which are summarized the experimental investigations of association and memory; of the nature and forms of learning, both in man and simpler organic types; and of the mechanism of thought processes, attention and its fluctuations, varied reactions, comparison, abstraction, and the forms of reasoning.

In this central division of the work, as well as in the first part, certain general features of the revision may be noted. First, of course, is the great addition to the mass of individual observations recorded, but this is only the beginning of what the new edition represents. Equally strik-

[1] Old Ed., Chap. I.; New Ed., Chap. IV.

ing is the reinspection within each individual field which, through its determination of the more intimate nature of the processes involved, has resulted in many important changes in our conception of the phenomena —for instance, in the distribution of elements in the time-scheme of reactions, in eye-movements and the visual perception of objects and space relations, in the orientation of the body and its sensational basis, etc. A third feature is the application of experimental methods to a larger range of psychological problems which is illustrated in the study of learning and the acquisition of skill and in the analysis of thought processes through controlled introspection. A fourth phase may be added, namely, the endeavor, in both sections of the work, to bring together the results of investigation upon human subjects and various types lower in the organic series, in order to achieve a more adequate view of the forms of behavior and their systematic modifications. This last point of view, however, is not maintained throughout the work, but rather appears as a conception applied in connection with specific problems, such as the development of a nervous system in the organic kingdom and the comparison of processes of learning in man and brute.

In the third part, "The Nature of the Mind," the more theoretical or speculative problems concerning the relation of mind and body are discussed in later and earlier editions alike. To this section in the original plan should properly be assigned the last chapter of part two on "Certain Static Relations of the Body and Mental Phenomena." The five chapters, which this rearrangement gives, are reduced to two in the present edition; roughly, the discussion is cut down to one half its bulk. This modification is in service of the specific aim of the book, to confine attention as closely as possible to the summation of empirical investigations and the correlation of their results in descriptive and explanatory concepts. This reduction has made possible a very considerable addition to the facts discussed, without increasing the bulk of the volume.

Throughout the work the authors show an admirable common sense and succinctness of statement in their presentation of the multitude of facts with which, in its several parts, the work deals. In very many places a fine expository sense is necessary to set forth intelligibly the results of complicated investigations without that elaborate description of methods and instruments which the scope of the "Elements" makes impossible. In very many cases, also, a sustained critical judgment is essential to the appraisement of both methods of research and bearing of results upon debated theories. In all these ways the authors seem to have maintained an attitude for which they deserve the highest praise.

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Geschichte der Psychologie. OTTO KLEMM. (No. VIII. of the Series, "Wissenschaft und Hypothese.") Leipzig and Berlin: B. G. Teubner. 1911. Pp. 387.

A general history of psychology, not limited to one period (like the work of Siebeck), nor to one nation (like that of Dessoir), certainly

answers a felt need, and such a history is here attempted in commendably brief compass. No limitation of scope is stated by the author, but it is evident that he does not attempt to do justice to the most recent period; otherwise he would scarcely have sketched the development of experimental psychology with no mention of the work on memory; nor the development of individual psychology with no mention of Galton nor of any other author from 1782 down to Stern. Had he seriously meant to trace the recent course of psychological discussion, he would probably have deemed James worthy of more than seven lines and Ebbinghaus of more than five, and found occasion to mention such names as Ward, Stout, etc. The references to recent work lack balance and perspective, and the history should properly be taken as ending at about 1870–1880.

The older history is rather attractively told. There is, indeed, little of the personal note; biographical facts are usually limited to dates. A knowledge of the history of philosophy is presupposed in the reader, for the development is here traced topic by topic, a very serviceable mode of presentation, though it leads to some disjointedness in the treatment of related topics, and to the omission of any consecutive account of the psychology of such men as Aristotle or Locke. The main headings under which the subject is treated are: metaphysical psychology, empirical psychology (the faculty psychology, the inner sense, the association psychology, Herbart's psychical mechanics, comparative psychology, and modern scientific psychology), fundamental concepts of psychology (definition of psychology, consciousness, classification of the contents of consciousness, psychological methods, psychical measurements), the most important theories (of sensation in general, of sight and hearing, of space perception, of feeling, and of will).

The value of the different sections will, of course, differ with the reader; to the reviewer one of the most instructive chapters was that on the faculty psychology. Probably every reader will find many pages for which he will thank the author.

Though the history of psychology, up to recent times, is closely bound up with the history of philosophy, the psychological importance of the several philosophers is by no means always proportional to their importance in metaphysics, and thus it happens that many an author who is passed over lightly in the histories of philosophy is worthy of considerable attention from the psychologist. Such were, to judge from the present book, Alcahan, Buridan, Vives, Bonnet, names unfamiliar to the psychologist, but deserving to be brought to his attention. A defect of the book in this regard is assuredly the almost complete neglect of the Scottish school, with the exception of Hamilton. The eighteenth and first half of the nineteenth centuries receive, on the whole, the most attention, and it is in regard to this period that the author's treatment is most valuable. Most of the psychological beginnings of the eighteenth century were, as the author says, submerged by the flood of critical and romantic philosophy; only the associationist psychology was saved by the continuity of British tradition.

Objections might be raised at several points to the author's historical

interpretations. His conception of the origin of empirical psychology is, for example (p. 45), that "inner perception first became aware of the greatest differences between complex experiences," and that the classes of experiences so separated were substantialized and made over into powers or forces; and so arose the conception of faculties of the soul, a conception which, in spite of its scientific deficiencies, "was yet suited in a high degree to portray the course of experiences as they presented themselves to primitive inner perception." It is improbable that the notion of faculties arose from inner observation, for when, in recent times, the attempt has been made to find the introspective differentiæ of judgment, will, memory, imagination, etc., no obtrusive and characteristic differences have appeared. It is much more likely that the faculties were from the beginning functions, performances, modes of behavior, and that they were distinguished not by introspection, but in terms of their end-results, even as the faculties of nutrition and reproduction were distinguished. The faculty psychology was based on a teleological classification, and this was its deficiency, since, being contented to define mental performances by their end-results, it felt no need either for introspective description or for a causal mechanics of mental processes.

Again, it seems likely that in tracing the beginnings of modern scientific psychology back almost wholly to physiology and especially to German sense physiology, the author is guilty of a serious though common omission. Two other streams of influence have certainly been potent in producing the psychology of to-day. One is a biological influence, which, through Darwin and Galton, has given us our child and individual psychology, studies of mental heredity, of the correlation of abilities, etc. The other is a medical influence, very strong in French psychology, and probably traceable back to Charcot more than to any other one man. This influence, as every one knows, was potent in forming the psychology of James as well as of many living psychologists in all lands. Each of these two lines of study brought to psychology a wealth of empirical data as well as of problems and methods; and though both of them have been and still more will be indebted to the experimental psychology of Helmholtz, Fechner, and Wundt, yet the historian must recognize their independence as sources of the fruitful empirical movement.

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Hegels Grundlinien der Philosophie des Rechts: mit den von Gans redigierten Zusätzen aus Hegels Vorlesungen. Edited by Georg Lasson. Leipsic: Felix Meiner. 1911. Pp. xcv + 380.

The present edition of Hegel's "Rechtsphilosophie" is without doubt the most satisfactory that has as yet appeared: indeed, it will probably take its place as the standard text of that work. The faultiness of Hegel's original text (1821) has always been apparent enough: its defects are probably due to the fact that Hegel never read the proof-sheets a second time, although he had indicated many corrections and additions upon the first proof which made a second scrutiny necessary. At any rate, the text

as it appeared was full of passages which have baffled the student and have been the vexation of translators. The only reconstruction of the text worth mentioning, during the ninety years since, is the well-known edition of Gans, appearing in 1833 and 1840, made familiar to English readers through the translation of Dyde. To be true, there is the edition of G. J. P. Bolland (1902), but this is based upon the Gans edition, and, while improving the text in a number of places, is hardly a critical attempt of a fundamental sort.

The present edition takes its point of departure, not from the Gans edition, but from the original text of 1821. The editor has attempted to clear this text of its obvious inconsistencies and unintelligible passages and to make it the most readable text possible. This he has achieved, first, by adding words where they seemed necessary to the sense probably intended, and secondly, where this device failed, by downright alterations in the sentence construction. These changes, as well as the variations from Gans and Bolland, are carefully noted in a table at the close of the volume. Where words have been merely added by the editor, they have been bracketed. Thus, the Hegelian text is still kept apparent—a care which Gans did not always observe, since he sometimes mingled added matter from the lecture-notes with the text itself, although he usually segregated them as addenda to the paragraphs they were meant to illumine.

The present text, then, is essentially a critical restoration. However, the lecture-notes of the Gans edition are included; only they are here gathered together in a separate portion of the book. In the original text, Hegel had given a number of references to passages in his "Phänomenologie des Geistes" and to the "Encyclopädie." These references, which Gans for the most part omitted, are reinstated.

The full and excellent introduction by the editor is especially commendable. Pastor Lasson is so well known as a sympathetic and patient student of Hegel, and has so clearly evinced his thorough scholarship in his editions of the "Encyclopädie" and of the "Phänomenologie" that one expects to find a luminous commentary in the first-hand analysis of the relation of Hegel's "Rechtsphilosophie" to his system as a whole. There is also a summary of Hegel's main positions in the book, as well as a section relating Hegel's views to the philosophic interpretation of history, in terms of the characteristic Hegelian conceptions.

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JOURNALS AND NEW BOOKS

THE AMERICAN JOURNAL OF PSYCHOLOGY. October, 1911. *Psychopathology of Every-day Life* (pp. 477–527): ERNEST JONES, M.D. – According to the interpretations worked out by Freud many of the abnormalities of every-day life are determined rather than accidental. Examples of forgetting, lapsus linguæ, lapsus calami, misprints, false

visual recognition, mislaying of objects, and symptomatic acts, are cited with their Freudian explanations. Some general observations on the scope, possibilities, and influence of this kind of observations are made. Modifications of the normal routine of mental activity come as a result of a counter-impulse or as a restraint to some tendency associated with it. *A Case of Colored Gustation* (pp. 528–539): JUNE F. DOWNEY. – A report of colored gustation like the more common instances of colored audition. The synesthetic factor is sensational in value. Often the color of the objects may enter into a fusion with their taste. *A Note on the Consciousness of Self* (pp. 540–552): E. B. TITCHENER. – Several subjects who had been trained in experimental introspection report concerning the consciousness of self. It appears that self-consciousness appears intermittently in many cases. *On Meaning and Understanding* (pp. 553–577): EDMUND JACOBSON. – The report of a study on the perception of letters, understanding of words and sentences by the report of what happens in a temporal order when certain stimuli are presented, also known as the Binet or Wurzburg method. *Minor Studies from the Psychological Laboratory of Vassar College. The Effect of Area on the Pleasantness of Color* (pp. 578–579): DOROTHY CLARK, MARY S. GOODELL and M. F. WASHBURN. – Preferences are indicated as follows: saturated colors, small areas with the exception of red, a large area for tints and shades. *Fluctuations in the Affective Value of Colors During Fixation for One Minute* (pp. 579–582): DOROTHY CRAWFORD and M. F. WASHBURN. – Associated ideas increase the pleasantness while adaptation seems to decrease it. *Imitation in Raccoons* (pp. 583–585): W. T. SHEPHERD. – The raccoon does not show inferential or a high type of imitation. *A Bibliography of the Scientific Writings of Wilhelm Wundt* (pp. 586–587): E. B. TITCHENER and L. R. GEISSLER. *Book Reviews:* W. Jerusalem, *Introduction to Philosophy:* W. H. SHELDON. Thomas Vernier Moore, *The Process of Abstraction:* W. F. BOOK. E. Toulouse et H. Pieron, *Technique de Psychologie experimentale de Toulouse, Vaschide et Pieron:* E. B. T. *Book Notes* (pp. 600–604). *Subject Index. Names of Authors.*

REVUE DE MÉTAPHYSIQUE ET DE MORALE. November, 1911. *L'intuition philosophique* (pp. 809–827): H. BERGSON. – "To philosophize is a simple act" and the apparent complications of philosophies are superficial. While science seeks to obey nature in order to command, philosophy seeks to sympathize with nature. *La logique déductive* (pp. 828–883): A. PADUA. – An exposition of the latest thing in logical ideography. *La mobilité chimique* (pp. 884–903): A. JOB. – In modern chemistry the stable emerges from the unstable and the one is explained by the other. *Etudes critiques. L'incoordonnable:* A. LALANDE. *Variétés. Ve. Congrès international de Progrès religieux:* I. BENRUBI. *Tables des matières. Supplément.*

Bosanquet, Bernard. The Principle of Individuality and Value. The Gifford Lectures for 1911. London: The Macmillan Co. 1912. Pp. xxxvii + 409. $3.25.

Boutroux, Emile. William James. New York: Longmans, Green, & Co. 1912. Pp. vii + 126. $1.00.

Fouillée, Alfred. La Pensée et Les Nouvelles Écoles Anti-Intellectualistes. Paris: Librairie, Félix Alcan. 1911. Pp. xvi + 412. 7 Fr. 50.

MacVannel, John Angus. Outline of a Course in the Philosophy of Education. New York: The Macmillan Co. 1912. Pp. ix + 207. $ .90.

Ward, James. The Realm of Ends or Pluralism and Theism. The Gifford Lectures delivered in the University of St. Andrews in the years 1907–10. New York: G. P. Putnam's Sons. Cambridge: University Press. 1911. Pp. xvi + 490. $3.25.

NOTES AND NEWS

We quote from an article in *Science* on "Pleistocene Man from Ipswich" by Professor George Grant MacCurdy, curator of the anthropological collection of the Peabody Museum of Natural History: "If the skeleton does not represent a burial and if the chalky sandy loam at this point is a part of the original mantel of boulder clay, then the man of Ipswich is the earliest yet found with the exception of Homo heidelbergensis (Pithecanthropus not being considered as Homo). It would correspond to the latest eolithic horizon, the so-called Mesvinian, and would thus be somewhat older than the man of Galley Hill, provided the latter is properly dated. But as I pointed out in a recent article there is room for doubt as to the age of the Galley Hill skeleton. From the foregoing account it would seem that the age of the Ipswich skeleton is also still an open question. The importance of having expert witnesses present at the disinterment in discoveries of this class was perhaps never better exemplified than at Galley Hill and Ipswich. Their absence will, it is feared, always leave the shadow of a doubt as to the age of the skeletons in question; and doubt is a serious handicap in matters of such scientific import. If both these specimens are correctly dated, then there lived as contemporaries in Europe for a long space of time two somatologically distinct races—a primitive type represented by the Mauer mandible, Neandertal, Spy, Chapelle-aux-Saints, La Quina, etc.; and a modern type represented by Ipswich, Galley Hill, and possibly Bury St. Edmunds."

The Annual Meeting of the Western Philosophical Association was held at the University of Chicago on April 5 and 6. The following papers were read at the session on April 5: "The Genesis and Functions of the Ethical Ideal," Professor George T. Kern; "The Essentials of a First Course in Ethics," Professor G. D. Wolcott; "The New Individualism," Professor J. H. Tufts; "The Introductory Course in Ethics," Professor F. C. Sharp; "Some Points on Presentation," Professor J. H. Tufts; "The Content and Method of the First College Course in Ethics," Professor J. W. Hudson; "College Ethics for Freshmen," Professor B. C. Ewer; "Bergson and Pragmatism," Professor A. W. Moore. On April 6, there was a joint session with the Western Psychological Association at which the

following papers were read: "A Psychological Definition of Religion," Professor W. K. Wright; "Present Status of the Problem of the Relation between Mind and Matter," Professor Max Meyer; "The Two Theories of Consciousness in Bergson," Professor E. B. McGilvary; "The Mechanism of Social Consciousness," Professor G. H. Mead; "The Paradoxes of Pragmatism," Professor B. H. Bode; "The Interpretation of Reality," Professor W. H. Wright; "Cognition, Beauty, and Goodness," Professor H. M. Kallen; "German Pragmatism," Professor G. Jacoby.

IN a former issue of the JOURNAL it was stated that Professor Josiah Royce, of Harvard University, had been compelled to give up the course of Bross lectures on "The Source of Religious Insight." It should have been stated, however, that this course of lectures was given in full at Lake Forest College, Illinois, last November, and that the lectures are already in the press and are to be published shortly by Charles Scribner's Sons. They were to have been repeated by Professor Royce at Harvard, and it is only their repetition which has been abandoned for the present.

DR. W. V. D. BINGHAM, director of the psychological laboratory, and professor of psychology and education at Dartmouth College, has been appointed director of the Dartmouth Summer School, which is to be reorganized and incorporated as an integral part of the institution's scheme of education.

THE Rev. Casper René Gregory, professor of theology in the University of Leipzig, has concluded a special course of lectures at Western Reserve University. The lectures included a series of six on "Five Hundred Years of Science in Leipzig."

THE Kaiser Wilhelm professor at Columbia University for the academic year 1912–13, who is nominated by the Prussian Ministry of Public Instruction, will be Phelix Krüger, professor of psychology at the University of Halle.

GILBERT MURRAY, Regius Professor of Greek, Oxford University, will give a series of lectures at Columbia University on April 15, 19, and 22. His general subject will be "Three Stages in Greek Religion."

THE Section on Neurology and Psychiatry, of the New York Academy of Medicine, held a meeting on April 4. The subject under discussion was "Psychanalysis."

DR. ARTHUR HOLMES, assistant professor of psychology at the University of Pennsylvania, has accepted the post of dean of the faculties of Pennsylvania State College.

PROFESSOR HERMAN HENDERSON, of the Wisconsin State Normal School at Milwaukee, will offer courses in the psychology of education at Oberlin College Summer School.

A NEW scientific review, *Bedrock*, was launched in England this month. It is to appear quarterly, and is to be edited by a committee of five members.

DR. WILLIAM WUNDT, professor of philosophy at Leipzig, has been made a knight of the Prussian order *pour le mérite*.